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available for making the observations. The general form of the curves will be seen to be very similar; the first increase always takes place in the middle of February; and the greatest increase during the last week of April and the first week of May; while the maximum is reached in the second week of the latter month.

Finally, comparing curves A and T and B and T, Fig. 2, we see that there is no remarkable resemblance between the temperature variation and the increase in the number of species; but quite a striking resemblance between the temperature variation and the number of species actually recorded. This is especially the case during the winter and early spring when it will be noticed that almost every sudden increase in the number of species seen was accompanied by a corresponding rise in temperature, and *vice versa*.

Such investigations and comparisons as the above seem to me to form one of the most interesting branches of the study of bird migration; and though the observations here recorded are too few to establish any general laws, I think that similar investigations carried on for a number of years would bring to light many important facts in regard to the subject, and would perhaps show that bird migration is much more regular than is generally supposed.



NOTES ON THE BIRDS OF THE MAGDALEN ISLANDS.

BY DR. LOUIS B. BISHOP.

THE FOLLOWING list is compiled exclusively from notes taken by my friend, Mr. Robbins, and myself between June 21 and July 18, 1887. The unfavorable weather during most of this period together with the time lost in travelling among the islands probably caused us to overlook many species; but I am at a loss to account for our failure to find such birds as *Ampelis cedrorum*, *Empidonax minimus*, *Poocætes gramineus*, and *Parus atricapillus* which were found by Mr. Cory to be tolerably common in 1878, particularly as both of us looked carefully for several of

them. Teal were observed on two occasions by Mr. Robbins, but he was unable to determine the species. I have endeavored to give as nearly as possible the dates of breeding of the different species, hoping that they may be of assistance to oölogists intending to visit these islands. The Magdalen Islands are so well known to naturalists that any description of them here would be out of place, and the present status of the different species breeding at the Bird Rocks has been so well defined by Mr. Lucas in 'The Auk' for April, 1888, that any further comment is unnecessary.

1. *Colymbus auritus*. HORNED GREBE.—One seen in a small pond at East Point on June 29, and the fragments of an egg of some species of Grebe were found on the beach near by. The people living on the islands call this bird the Water-witch. It undoubtedly breeds, but is not at all common.

2. *Urinator imber*. LOON.—One seen in the waters of the Gulf off Grosse Isle on June 25. Probably breeds.

3. *Fratercula arctica*. PUFFIN.—Breeds abundantly in twisting burrows on the top of Great Bird Rock, and in the crevices of the cliffs on Bryon Island.

4. *Cephus grylle*. BLACK GUILLEMOT.—Breeds abundantly in scattered colonies on most of the islands of the group. None were seen on the Bird Rocks.

5. *Uria troile*. MURRE.—Common. Breeds on Bryon Island and the Bird Rocks. About a dozen specimens of the lately eliminated species *U. ringvia*, or, as at present considered, phase of plumage of *U. troile*, were breeding on the cliffs of Great Bird Rock. As far as we were able to judge from the limited time at our disposal they were in pairs, and seemed to be entitled to the rank of a distinct species. An egg obtained by Mr. Robbins from one of these peculiarly marked birds could not be distinguished from those of the other Murres.

6. *Uria lomvia*. BRÜNNICH'S MURRE.—Breeds abundantly on Great Bird Rock. Six Murres shot from the top of the Rock were of this species, and none of the common Murres were seen there.

7. *Alca torda*. RAZOR-BILLED AUK.—Breeds, but not in large numbers, on Great Bird Rock, Bryon Island, and Entry Island. On Great Bird Rock this species with *Fratercula arctica* breeds principally near the top of the cliffs, leaving the lower ledges for the Gannets, Kittiwakes and Murres.

8. *Rissa tridactyla*. KITTIWAKE.—Breeds abundantly on Great Bird Rock, but was not observed elsewhere among the islands.

9. *Larus marinus*. GREAT BLACK-BACKED GULL.—A flock of between twenty and thirty in the adult plumage was observed on a sand bar on the West Point of Amherst Island, July 9. No evidence of the breeding of this species could be obtained.

10. *Larus argentatus smithsonianus*. AMERICAN HERRING GULL.—Single individuals were seen at various dates. Probably it does not breed, although a few may on East Point.

11. *Sterna hirundo*. COMMON TERN.—Breeds abundantly on the sand beaches of most of the islands.

12. *Oceanodroma leucorhoa*. LEACH'S PETREL.—Breeds in small numbers on Great Bird Rock, Bryon Island, and probably on most of the other islands, although we were unable to find nests. I am indebted to Mr. Lucas and Mr. Palmer for the knowledge of the presence of this species on the Bird Rocks.

13. *Sula bassana*. GANNET.—Breeds abundantly on the Bird Rocks. The fishermen and others collect large numbers of Murres' and Gannets' eggs almost daily during the breeding season.

14. *Phalacrocorax dilophus*. DOUBLE-CRESTED CORMORANT.—It is with great hesitation that I include this species, as none were seen by either Mr. Robbins or myself. A fisherman informed me that a few pairs of "a large black bird with two plumes on the sides of the head" yet nested on Shag Rock, where this species formerly bred in considerable numbers. He also claimed to have found their eggs that summer. Unfortunately we were unable to visit Shag Rock ourselves to verify or disprove his statement.

15. *Merganser serrator*. RED-BREASTED MERGANSER.—Common, breeding abundantly on some of the islands. On Seal Island, a small island a few acres in extent lying in the large lagoon near Grand Entry, and thickly covered with a low growth of spruces, we found on June 24 in the space of a couple of hours eight nests containing sixty-five eggs. The eggs were all fresh and most of the sets were incomplete, showing that this bird breeds very late. The nests were simply a few leaves and feathers hidden under the overhanging branches of a spruce, and were placed from ten to forty yards from the water.

16. *Anas obscura*. BLACK DUCK.—Common summer resident, breeding in the marshes bordering the small fresh-water ponds in the close neighborhood of the salt water.

17. *Oidemia deglandi*. WHITE-WINGED SCOTER.—A flock of a dozen or more remained in the waters of the Gulf near Grindstone Island during our entire stay. However, I do not think that this species breeds anywhere among the islands.

18. *Botaurus lentiginosus*. AMERICAN BITTERN.—Common summer resident, breeding in the open swamps on all the principal islands. A set of four slightly incubated eggs was taken on Grindstone Island on July 14.

19. *Gallinago delicata*. WILSON'S SNIBE.—Abundant. Breeds plentifully on all the islands. The young were able to fly by the latter part of June.

20. *Tringa minutilla*. LEAST SANDPIPER.—One seen on Grindstone July 5, and four others on July 14. Probably does not breed.

21. *Totanus melanoleucus*. GREATER YELLOW-LEGS.—We found a

flock of five on the borders of a small pond on Grindstone, July 16. I think that quite probably a few breed.

22. *Actitis macularia*. SPOTTED SANDPIPER.—Rather common, breeding on most of the islands.

23. *Ægialitis semipalmata*. SEMIPALMATED PLOVER. — Tolerably common, breeding on the beaches not far from high-water mark.

24. *Ægialitis meloda*. PIPING PLOVER. — More common than the last, and breeding in the same situations. Young fully fledged before the middle of July. On the sand bar, about half a mile long and a hundred yards wide, stretching between Grindstone and All Right Islands, two pairs of this species and three pairs of *Æ. semipalmata* were breeding. The Piping kept half of the beach to themselves, the Semipalmated taking the rest, neither species, as far as we were able to observe, ever venturing on the territory belonging to the other.

25. *Circus hudsonicus*. MARSH HAWK. — Not common. One seen June 23.

26. *Falco columbarius*. PIGEON HAWK.—Tolerably common summer resident. Three noted. One seen on Entry July 8, a male taken on Grindstone July 15, and another seen near the same place July 17. The Grindstone birds were probably a pair breeding.

27. *Asio accipitrinus*. SHORT-EARED OWL.—I saw an Owl that I am positive was of this species in the marshes between All Right and Grand Entry on June 23, but as I was unable to shoot it the identification remains in doubt.

28. *Ceryle alcyon*. BELTED KINGFISHER.—Abundant summer resident, breeding on all the islands. It breeds rather late, as a set of fresh eggs was taken at Grosse Isle, June 28.

29. *Dryobates villosus*. HAIRY WOODPECKER.—One seen by Mr. Robbins on Grindstone, June 22.

30. *Dryobates pubescens*. DOWNY WOODPECKER.—One seen on Grindstone, June 21.

31. *Colaptes auratus*. FLICKER.—Common, breeding on all the islands.

32. *Tyrannus tyrannus*. KINGBIRD.—One seen and heard frequently on Grindstone on the afternoon of June 21, the day of our arrival. The next day it was gone, and no other Flycatcher could we find on any of the islands during our entire visit, although Mr. Cory found *Empidonax minimus* quite common in 1878.

33. *Corvus corax principalis*. NORTHERN RAVEN.—Common. Breeds on all the islands, but most frequently on those least inhabited.

34. *Corvus americanus*. AMERICAN CROW.—Abundant, breeding on all the islands, and showing little fear of man. A set of four fresh eggs was taken on Grindstone, June 22, within fifteen yards of a barn.

35. *Scolecophagus carolinus*. RUSTY BLACKBIRD.—Common. Breeds abundantly in the swamps at East Point. They appeared to have finished breeding by the end of June.

36. *Carpodacus purpureus*. PURPLE FINCH.—Rather rare. A male

seen on Grindstone, June 23, and others heard singing on different occasions.

37. *Loxia curvirostra minor*. AMERICAN CROSSBILL.—Rare. A male seen on Grindstone, July 4.

38. *Loxia leucoptera*. WHITE-WINGED CROSSBILL.—Common on Grindstone and Entry, and probably on the other islands. A pair of fully fledged young were taken on July 12.

39. *Spinus pinus*. PINE SISKIN.—One of the most abundant birds until July 10. They finish breeding before the first of July, and by the twelfth most of them have left the islands.

40. *Ammodramus sandwichensis savanna*. SAVANNA SPARROW.—Very abundant, breeding in every open field on the islands, especially in the neighborhood of the shore. Most of the Savanna Sparrows taken wanted the yellow on the wing, but a careful search failed to reveal any specimens of *A. princeps*.

41. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—Common, nesting about the last of June.

42. *Spizella pusilla*. FIELD SPARROW.—A pair of this species in worn breeding plumage were taken on Entry Island July 8; they evidently had a nest in the immediate vicinity. This is, I believe, the most northern record of the breeding of this species on the Atlantic coast.

43. *Junco hyemalis*. SLATE-COLORED JUNCO.—Breeds, but seems to be rather irregularly distributed among the islands, being much more common on some than on others.

44. *Melospiza fasciata*. SONG SPARROW.—Rather common summer resident. I found this species more abundant on the open hills, two hundred to three hundred and fifty feet above the sea, in the interior of Entry Island than anywhere else.

45. *Melospiza georgiana*. SWAMP SPARROW.—Not as common as the last. A pair were found breeding in a small swamp on Grindstone July 14, and several others seen later. The male of the pair taken July 14, inclined to melanism in plumage and had a black spot .95 inch long by .45 broad on the right side of the breast. The female was an unusually small specimen, the wing measuring 2.16 and the tail 2.28 inches.

46. *Passerella iliaca*. FOX SPARROW.—Rather common, breeding on all the islands about the last of June. The nest is larger than that of any other Sparrow with which I am acquainted.

47. *Clivicola riparia*. BANK SWALLOW.—Tolerably common, breeding on Grindstone.

48. *Mniotilta varia*. BLACK-AND-WHITE WARBLER.—Rare. A male with the black of the throat almost uninterrupted was taken on Grindstone July 14, and a female observed on the 17th. Probably breeds.

49. *Dendroica æstiva*. YELLOW WARBLER.—Common summer resident.

50. *Dendroica coronata*. MYRTLE WARBLER.—Common summer resident, nesting in the latter part of June.

51. *Dendroica maculosa*. MAGNOLIA WARBLER.—Rare. A male taken on Grindstone, July 16.

52. *Dendroica striata*.—BLACKPOLL WARBLER.—One of the most abundant birds, breeding everywhere. This bird and *D. coronata* choose the same localities for their nests—dense spruce thickets, but while *D. striata* generally nests close to the trunk, *D. coronata* places its more spacious home out on a horizontal branch. Fresh eggs were taken as late as July 12.

53. *Dendroica virens*. BLACK-THROATED GREEN WARBLER.—Rare. One only noted, and as that was frequently heard singing at the same place on Grindstone, it undoubtedly had a nest in the vicinity.

54. *Seiurus aurocapillus*. OVENBIRD.—Tolerably common on Grindstone, where one was seen by Mr. Robbins, and others heard singing on various occasions by us both.

55. *Seiurus noveboracensis*. WATER-THRUSH.—Rather rare. One taken on Grindstone July 15, and another seen on the 16th.

56. *Geothlypis trichas*. MARYLAND YELLOWTHROAT.—I hardly like to include this species, as, although we found it fairly common in Nova Scotia, and are both positive that we heard its song many times on the Magdalens, I was unable to obtain a single specimen.

57. *Setophaga ruticilla*. AMERICAN REDSTART.—Abundant summer resident, especially on Grindstone. Strange to say we saw about ten females to one male; the young could not have been fledged at the time of our visit.

58. *Troglodytes hiemalis*. WINTER WREN.—Tolerably common, heard much more frequently than seen.

59. *Sitta canadensis*. RED-BREASTED NUTHATCH.—Tolerably common summer resident.

60. *Parus hudsonicus*. HUDSONIAN CHICKADEE.—Common. Young fledged by July 1. This was the only Chickadee found on the islands, although a careful search was made for *P. atricapillus* which Mr. Cory found more abundant than the present species.

61. *Regulus satrapa*. GOLDEN-CROWNED KINGLET. — Abundant, breeding on all the islands. A nest taken by Mr. Robbins on Grindstone July 16, was situated in a spruce, about thirty-five feet from the ground. It was firmly attached by the brim to the branch above and at the same time rested on, and was slightly fastened to, the small branches below. The young at this date were able to fly.

62. *Turdus fuscescens*. WILSON'S THRUSH.—Common summer resident.

63. *Turdus aliciae*. ALICE'S THRUSH.—One taken, and others that I am confident were of this species observed, in an extremely thick growth of small spruces on Grindstone July 15. Probably breeds. The measurements of the bird taken are: wing, 3.69; tail, 2.99; culmen, 0.52, and tarsus, 1.14 inches.

64. *Turdus ustulatus swainsonii*. OLIVE-BACKED THRUSH.—Noted several times, but is not common. Breeds.

65. *Turdus aonalaschkæ pallasii*. HERMIT THRUSH.—Common, breeding on most of the islands. I was quite surprised to find a single bird of

this species apparently thoroughly at home on Great Bird Rock. A more unsuitable place for a bird fond of the deep woods cannot be imagined.

66. *Merula migratoria*. AMERICAN ROBIN.—Very abundant, breeding everywhere. Most of the nests contained fresh eggs at the time of our arrival.

DESCRIPTION OF THE SUPPOSED NEST AND EGGS OF *ZONOTRICHIA QUERULA*, HARRIS'S SPARROW.

BY CAPT. CHARLES E. BENDIRE.

FOR the purpose of drawing the attention of ornithologists located along the northern border of Montana and Dakota, and throughout southern British North America, to the fact that the nest and eggs of this interesting species remain still unknown, and to the probability of its breeding in these regions, instead of further north, I will state that none of the large collections of birds, nests and eggs made by the following gentlemen of the Hudson's Bay Company, Robert McFarlane, Strachan Jones, T. McDougall, Donald Gunn, C. P. Gaudet, and J. Lockhart, and which were donated to the Smithsonian Institution at Washington, D. C., contained specimens of this species, although representing nearly every other bird to be found breeding throughout the vast interior of the former Hudson's Bay Territory. The explorations made by these gentlemen were thorough and continued through several seasons, and, chiefly through the good efforts of Mr. Robert Kennicott, all their valuable field notes and an immense amount of material were brought together.

From the fact that no specimens of *Zonotrichia querula* were obtained throughout the explorations, which extended well into the Arctic Circle, and began about the 54th parallel, I necessarily believe that the summer home of Harris's Sparrow, if properly looked for, will be found along the foothills of the Bearpaw and Chief Mountains in Montana, along the Turtle Mountains in Dakota, and their centre of abundance probably near Duck Mountain, Manitoba, as well as in suitable localities in the Territories of Alberta and Assiniboia, south of Lat. 54°.